import java.util.Scanner;

public class TicTacToe {

public static void main(String[] args) {

System.out.println("You will play Tic Tac Toe against the computer. You will enter an X, Y coordinate \nto choose the space on the board you wish to place your mark.");

char [] [] ttt = new char [3][3];

boolean playerWin = false;

boolean computerWin = false;

boolean catsGame = false;

initializeBoard(ttt);

while(!playerWin||!catsGame||!computerWin)

{

playerMove(ttt);

if(checkPlayerWin(ttt)) break;

if(checkCatsGame(ttt)) break;

computerMove(ttt);

if(checkComputerWin(ttt))break;

}

}

public static void initializeBoard( char [] [] board)

{

for (int y = 0; y < 3; y++)

{

for (int x = 0; x < 3; x++)

{

board[x][y] = '-';

}

}

}

public static void playerMove(char [] [] board)

{

Scanner s = new Scanner(System.in);

boolean legalMove = false;

while(!legalMove)

{

System.out.println("Enter your move as two integers separated by a space");

int x = s.nextInt();

int y = s.nextInt();

if (board[x][y] == '-')

{

board[x][y] = 'X';

legalMove = true;

}

else System.out.println("That space has already been chosen. Try another");

}

outputBoard(board);

}

public static boolean checkPlayerWin(char[][] board)

{

boolean winner = false;

//check horizontal wins

for(int y = 0; y < 3; y++)

{

winner = true;

for(int x = 0; x <3; x++)

{

if (board[x][y] != 'X') winner = false;

}

if (winner)

{

System.out.println("You win!");

return true;

}

}

//check vertical wins

for(int x = 0; x <3; x++)

{

winner = true;

for(int y = 0; y < 3; y++)

{

if (board[x][y] !='X') winner = false;

}

if (winner)

{

System.out.println("You win!");

return true;

}

}

//check diagonals

if (board[0][0] == 'X' && board[1][1] == 'X' && board[2][2] == 'X')winner = true;

if (board[2][0] == 'X' && board[1][1] == 'X' && board[0][2] == 'X') winner = true;

if (winner)

{

System.out.println("You win!");

return true;

}

return false;

}

public static void outputBoard(char [] [] board)

{

for (int y = 0; y < 3; y++)

{

for (int x = 0; x < 3; x++)

{

System.out.print(board[x][y]);

}

System.out.println();

}

}

public static boolean checkCatsGame(char [] [] board)

{

for (int y = 0; y < 3; y++)

{

for (int x = 0; x < 3; x++)

{

if (board[x][y]=='-') return false;

}

}

System.out.println("Cat's game. It's a tie.");

return true;

}

public static void computerMove(char [] [] board)

{

System.out.println("Now the computer's turn...\n");

boolean legalMove = false;

while(!legalMove)

{

int x = (int)(Math.random() \* 3);

int y = (int)(Math.random() \* 3);

if (board[x][y] == '-')

{

board[x][y] = 'O';

legalMove = true;

}

}

outputBoard(board);

}

public static boolean checkComputerWin(char [] [] board)

{

boolean winner = false;

//check horizontal wins

for(int y = 0; y < 3; y++)

{

winner = true;

for(int x = 0; x <3; x++)

{

if (board[x][y] != 'O') winner = false;

}

if (winner)

{

System.out.println("Computer wins.");

return true;

}

}

//check vertical wins

for(int x = 0; x <3; x++)

{

winner = true;

for(int y = 0; y < 3; y++)

{

if (board[x][y] !='O') winner = false;

}

if (winner)

{

System.out.println("Computer wins.");

return true;

}

}

//check diagonals

if (board[0][0] == 'O' && board[1][1] == 'O' && board[2][2] == 'O')winner = true;

if (board[2][0] == 'O' && board[1][1] == 'O' && board[0][2] == 'O') winner = true;

if (winner)

{

System.out.println("Computer wins.");

return true;

}

return false;

}

}